

Teacher: Ms. Libby**Office Location:** Room 05**Office Hours:** Gold Day 8:30 - 10:30am**E-mail:** ashley.m.libby@maine.edu

Summary of Unit

Knowing how to solve linear equations and inequalities is an extremely important mathematical tool. Students will be able to use this knowledge to solve for multiple variable equations algebraically and graphically. Students will be able solve these systems using techniques such as, rearranging the equation, find the slope of the equation, and using simple math tools such as PEMDAS. Students will be asked to create and solve their own equations and track their progress using blogger, iMovie, Sketchfu, Student Publishing, Mind Mapping, and a Smart Board. Students will be formatively assessed using each one of these technology tools. Students will learn how to find and create their own linear inequalities and equations using variables in order to perform tasks such as building a floor plan for a house or creating a navigational route around the Casco Bay Islands.

Establish Goals

Math Common Core State Standards

Content Area: Algebra**Grade:** High School**Domain:** Reasoning with Equations and Inequalities**Cluster:** Solve systems of equations**Standard:**

6. Solve systems of linear equations exactly and approximately, focusing on pairs of linear equations in two variables.
7. Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically

Students will understand that

- solutions to equations have an identity which is often developed by rewriting an expression in an equivalent form.
- the same solution techniques used to solve equations can be used to rearrange formulas.
- graphing two formula functions can allow for finding approximate solutions to the equation.

Essential Questions

- How can I solve for two variables and two equations using simple math tools?
- How can I rewrite this equation so I can graph it easier?
- Why can graphing equations help you solve the equations themselves?

Students will know

- Vocabulary: Inequalities, variable, slope, equation, integer, real, rational, irrational, and whole numbers.
- Terminology: Slope, properties and Identity.
- Formulas: Area, slope-intercept, distributive, associative, and commutative.

Students will be able to

- demonstrate that the same solution techniques used to solve equations can be used to rearrange formulas.
- document that graphing two formula functions can allow for finding approximate solutions to the equation.
- use the same solution techniques used to solve equation to rearrange formulas.
- infer that graphing two formula functions can allow for finding approximate solutions to the equation.
- consider that solutions to equations have an identity which is often developed by rewriting an expression in an equivalent form.
- recognize that solutions to equations have an identity which is often developed by rewriting an expression in an equivalent form.

Performance Task Overview

The Maine Charter Company is starting a new tour that takes tourists around the Casco Bay Islands. There are many possible routes and the charters chief navigator just retired and his position is now open for hiring. The company is now looking for young experienced sailors to come up with the navigational routes around the Casco Bay Islands. They want you to come up with three new routes that are safe and also a nice scenic route around the islands. You have already passed the interview stage of this hiring process but now you must present your routes to the board of directors in an oral presentation. They want you to use Google Earth and you must come up with linear equations that represent each route. This will help ease of use for the charter company. The route must also be attractive using many Google Earth tools specified in the rubric given to you prior to the presentation. If the board of directors likes your route then they will present them to the Maine Charter Company and you will be their new chief of navigation!

Expectations

Absences: Students are required to come to every class. If students have four or more unexcused absences, they will receive an after school detention unless otherwise specified by me or the principle. If students do miss a class, they must either visit the class website to see what was missed in class or get the notes from a friend. The student must return to class with a clear idea of where the class is in the lesson. Any homework the student missed will be in the "absent" folder with their name on it and is due the next class day. If student misses classes because of any doctors appointment, a signed slip from their doctor must be presented on the day of their return or else absence is considered unexcused. If the student misses a test or quiz they must come see me during my office hours or email me to schedule a time to retake the quiz. There will be no points taken off the quiz. If the student knows in advance when they will be missing class, then they must inform me at least two days prior to their future absence so I can make sure that they have all the required handouts and homework they will miss. A signed absence form is still required on return even if I have been informed of your absence prior.

Plagiarism: There is no plagiarism allowed in my classroom. Plagiarism is taking someone else's work and sign it as your own and taking credit. Plagiarism can happen unintentionally so please follow the guidelines on how to properly quote from any type of text and how to give proper credit and acknowledgements. If you are uncertain of how to quote or give credit, you may see me after class, during my office hours or you can email me. Make sure you do not ask the class period before the assignment is due or email me the morning before class because there is a chance I will not check my email the morning before class. If plagiarism does occur, students will be required to revise the homework assignment and give proper credit where credit is due. Students will not receive any points off for the first time they must revise due to plagiarism. If students continue to plagiarize, then ten points will be taken off the overall grade of the assignment each time it happens.

Assignments: Assignments are not just for my benefit but for the students benefit as well. It shows how the student is progressing throughout the lesson and the year. Homework is a way to assess to see if the students are learning what they are supposed to and to what extent. I will modify the lessons according to the grades on the homework to better fulfill the students different learning needs. This means that it is extremely important that all assignments get turned in on time. Students will be able to revise homework and tests for a better grade if they chose so. I will be taking the average of both grades and use that as the final grade for that specific assignments. If students are ahead of the class or if they need extra help, I will revise and change the homework for those specific students to ensure that everyone is moving at their own pace but still retaining the information.

Classroom Expectations: Students are required to be respectful their peers and any and all teachers. Students will raise their hand if they have any questions or answers. This way everyone has a fair chance to speak without each student speaking at once. Students will use their inside voice when inside my classroom unless otherwise specified by the teacher. If at any time the students forget the classroom rules, there will be posters around the room as a reminder. Students will pick up any trash that they create so that the classroom is always a clean and fun environment for learning. If students have any problems working or sitting by another student, they may speak with me and I will handle the situation accordingly. Students will also take good care of any and all materials provided to them by the school or teacher.

Benchmarks (400 points)

- **Smart Boards (50 points):** Students must solve simple systems of linear inequalities graphically and algebraically and present the equation to the class using the smart board so the class can follow along. The smart board will allow the student to be interactive and solve the equation while the class is able to watch on a bigger screen. The student must show the steps and what formulas they use. They must create an X, Y table for the problem, a coordinate plane, and a plain worksheet to show their break down of the equation.
- **Sketchfu (50 points)** Students will have to create a picture by using linear equations. All of the lines must connect so that there is an empty space in the middle of the picture. By having all of the equations surrounding the picture, the students must find the area inside the picture. The students will create their picture on Sketchfu and must include how they found the equation of each line and how they were able to find the area in the picture. The student will present their sketch in front of the class and have it play while they present their answer.
- **Mind Mapping (50 points)** Students will create a graphic organizer containing formulas and solution techniques. They will then come up with examples for each solution technique. Students will leave an extra space for other examples and formulas and there will be a day in class where students will get into groups and each say their example and write down new examples that were discussed and other solution techniques they did not have. Students will be able to keep this graphic organizer as a study tool for the rest of the year and can continue to add to it as new examples and techniques arise throughout the course.
- **Student Publishing (75 points)** Students must write a short story explaining how to solve simple system of linear inequalities. They will be writing this story for other classes to read in future years. Students must be precise and clear on the techniques and will be writing to students that have never learned the concept before. Students must provide many easy to understand examples and visual graphs to make the concept easier to understand. Student will peer edit each other to swap ideas and to make sure there are no mechanical or grammatical errors.
- **iMovie (75 points)** Students will work in assigned groups to create a skit or song to demonstrate ways to rearrange formulas and tips to solve equations. The skit must include written text so the audience can read and hear the script. Any song must have appropriate music or no music at all and must be typed out and printed so I can make copies for the rest of the classroom. Any spoken words must be clearly understood. Student will include key words such as; Slope intercept form, equations, inequalities, variables, and area. For each concept there must be a graph given as an example while the skit or song is playing. This way students will have a visual to better understand that part of the skit/song.
- **Blogger (100 points)** Throughout the year, students will be keeping up with a weekly blog on how they are progressing through each lesson. They will clearly list any problems they found while trying to complete an assignment. They will explain if they had any trouble understanding the lesson or concept and why. If students did not have any troubles that week, they will write about two new things they learned and why it is important for them to know that information. I will be constantly checking the blogs for ideas on how I can modify by lessons and It will give me a small picture on how my students feel they are doing in the class. I will make comments on the blogs as I see fit. There will be no points taken off for any grammatical errors although students should always spell check before hitting "publish" on the blog

entry.

Performance Task (see above) (200 points)

Grading Scale

A (93 -100), **A-** (90 - 92), **B+** (87 - 89), **B** (83 - 86), **B-** (80 - 82), **C+**(77 - 79), **C** (73-76), **C-** (70 - 72), **D+**(67 - 69), **D** (63 - 66), **D-** (60 - 62), **F** (0 - 59).